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SPRUCE BUDWORM SITUATION
IN
SOUTHERN IDAHO
1958

By
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Spruce Budworm Situation
in
Southern Idaho
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INTRODUCTION

Since 1952 the spruce budworm^{1/} has increased in extent in southern Idaho. However, 1958 was the first year that the severity of damage did not appreciably increase in general. Control projects were conducted in 1955, 1956, and 1957 covering a total of 2,029,747 acres of Douglas-fir, true firs, and spruce.

No control project was recommended or conducted in 1958. This was based on the possible extension of existing spider mite infestations and, in most cases, the budworm infestations were relatively new and tree killing was not imminent.

SURVEY METHODS

The aerial and ground surveys were again coordinated to better evaluate budworm damage. The purpose of these surveys is to locate current budworm-damaged areas, possible reinfestations with sprayed areas, and to determine the severity of defoliation. The aerial phase provided all detection and a visual estimate of damage intensity for the inaccessible areas, while the ground phase utilized sampling methods based on the sequential plan.

^{1/} *Choristoneura fumiferana* (Clem.)

The damage cruise, 40 one-acre plots, established and sampled as part of the budworm population-damage study ^{were} ~~were~~ utilized during the ground survey. In addition, sampling for mature larval and pupal parasites was accomplished this year as part of the survey. More of this type of information is needed and planned in order to better evaluate the true picture of a budworm infestation.

RESULTS

Again, as in 1957, the budworm does not appear to be lessening in total acreage affected in southern Idaho. The Challis, Salmon, and Targhee National Forests show a decided increase in both area and severity of damage while the Boise and Payette Forests a marked decrease and the Sawtooth remained static. The budworm picture is rather complex this year concerning area infested, type, degree, and status of the infestation. Consequently, each forest will be discussed individually.

Boise National Forest

(33,700 Acres)

infested

The 1957 survey showed approximately 39,000 acres infested with budworm. This total has not changed appreciably this year. No new infestations of any size were noted, though several patches of light defoliation were observed.

Area A. Coulter Summit--10,000 acres. This infestation has been present for about 4 years. The severity of defoliation increased annually until this year. The survey revealed between 25-50 percent of the current growth defoliated within this area. The acreage affected has remained rather

static in size for the past 3 years. Sampling showed 30 percent parasitism of the early instar larvae and 14 percent parasitism of the mature larval and pupal populations. Neither degree of parasitism is great enough to be of controlling magnitude.

A budworm research plot was established within this area and intensive sampling studies conducted for the past 2 years.

Area B. Sulphur Creek--17,000 acres. This is a reinfestation within the area sprayed in 1956 for the control of spruce budworm. Damage ranges from a medium degree of defoliation around Morehead Mountain to light defoliation along Boundary Creek. The acreage affected did not increase during this, its second year of existence.

Area C. Miscellaneous and isolated spots--6,700 acres. These spots are mentioned only for the record. They are small and the extent and degree of damage does not warrant concern.

Challis National Forest
(103,500 infested acres)

The Challis National Forest contains a most drastic increase of area affected by the spruce budworm. In 1956 only 22,250 acres were reported and in 1957, 18,200 acres. During the control projects of 1956 and 1957 some 30,990 acres were sprayed that were adjacent to larger areas of infestation on bordering forests (Boise and Payette).

The 1958 surveys revealed approximately 36,000 acres of light degree of defoliation, 60,000 acres of medium and 7,500 acres of heavy. ~~None of these~~

~~areas were sampled on the ground due to their inaccessibility.~~ In all likelihood, the infestations are continuous in area, but due to their inaccessibility no ground surveys were made.

Area D. Middle Fork of the Salmon River--25,000 acres. It is felt that this infestation was due to the reinfestation across the river within Sulphur Creek (Boise N.F.). However, the west face of Big Soldier Mountain was sprayed in 1956 and a reinfestation here could also contribute to the increase. The intensity of defoliation is rated at a medium degree.

Area E. Rapid River--86,000 acres. This infestation has increased from 3,700 acres, as reported in 1957, to its present size. However, the overall intensity of defoliation receded from medium to light.

Area F. Little Soldier Creek--5,000 acres. This small hot spot was rated as containing a heavy degree of intensity of defoliation. Although aerial observation could not detect intervening defoliation, this area is probably contiguous to Areas E and G.

Area G. Loon Creek--35,000 acres. Loon Creek was first reported as containing budworm defoliation in 1957. The area contains two spot infestations totaling 6,400 acres of light to medium degree of defoliation. In 1958 Loon Creek now contains 35,000 infested acres of medium degree of defoliation.

Area H. Indian Creek--2,500 acres. This is a new infestation, isolated, but rated as containing heavy degree of defoliation.

Payette National Forest
(14,850 infested acres)

The Payette National Forest is relatively free of any large budworm infestations. Four small areas were reported totaling 14,850 acres. The Bear Creek Point and Pilot Peak areas were "hot-spotted" during the 1957 control project, but as is often the case with this type of approach, re-infestation has occurred. In view of total acres sprayed for budworm on the Payette Forest (624,293) this small acreage of infestation is remarkable. It should be sufficient to only list these areas.

Area I. Willow Creek--2,500 acres - light.

Area J. Rugged Creek--1,250 acres - light.

Area K. Bear Creek Point--8,000 acres - medium.

Area L. Pilot Peak--3,100 acres - medium.

Salmon National Forest
(478,000 infested acres)

Of the 1,020,350 budworm infested acres in southern Idaho, almost one-half of these lie within the Salmon National Forest. The 478,000 acres contain 100,000 acres defoliated to a heavy degree; 222,000 medium, and 156,000 light. This total shows an increase of approximately 200,000 acres over the amount recorded in 1957. The expansion, however, was noted as defoliated to a light degree of damage. The 100,000 acres of heavy defoliation is also the area of reinfestation since the 1956 control project. In addition, this area contains approximately 10,000 acres of spider mite damage.

Area M. Yellowjacket Creek--80,000 acres. Only ~~19~~⁴⁹,800 acres were infested in 1957. Thus an increase of over 30,000 acres occurred in 1958. However, the entire area was noted as receiving between 25-50 percent defoliation of the current growth.

Area N. Porphyry Creek--8,000 acres. This area remained static in size but lessened in intensity of damage. Both Douglas-fir and alpine fir showed less than 25 percent defoliation of the current growth. Samples of the mature larval and pupal population were taken and parasitism of these stages averaged 38 percent. This amount of parasitism, though derived in segment rather than in aggregate, could be the retarding factor in this, an infestation that failed to expand.

Area O. Big Deer Creek--42,000 acres. This area also failed to expand in size but appeared to reduce in severity of defoliation. The heaviest defoliation remains in Deer and Clear Creeks--sampling showed between 50-75 percent of the current buds eaten and tapering to less than 25 percent near Blackbird Mountain. Parasitism averaged 20 percent of the mature larval and pupal population within Big Deer Creek.

Area P. Salmon River--312,000 acres. The infestation along the Salmon River showed the greatest expansion in size, yet the severity of damage remained the same. The new infestations resulted in only a light (less than 25 percent) degree of the defoliation of alpine fir, but greater defoliation of Douglas-fir. For example, along the creek bottoms, Fourth-of-July Creek showed between 25-50 percent of the new buds eaten, and

Carmen Creek 75-90 percent while the ridge-top alpine fir reflected less than 25 percent defoliation on Sheep and Fourth-of-July Creeks and between 25-50 percent near Gibbons Pass. This eastern expansion received 35 percent parasitism of the mature budworm larval and pupal populations.

In 1957, 183,400 acres were reported as being infested: 91,700 acres were noted as medium defoliation and 91,700 as heavy. The 1958 surveys revealed 312,000 acres infested with budworm: 100,000 acres as containing heavy defoliation, 122,000 acres as medium, and 90,000 acres as light. To further complicate matters, the 100,000 acres recorded as containing a heavy degree of defoliation also contains approximately 10,000 acres of spider mite damage, and all of these acres were sprayed in 1956.

The data from the 1956 control project reveals that good results were accomplished. Budworm larval mortality ranged from 80.7 to 100 percent and averaged 94.7 percent. Sampling for mortality and spray coverage during the project is considered to have been adequate since only one spray block failed to receive either a mortality or spray deposit card check.

A brief reconnaissance was made into the adjacent lands of Montana and it is felt that herein lies the answer to this reinfestation on the Salmon Forest. The forest visited in Montana revealed more severe defoliation from budworm than has ever been witnessed in southern Idaho.

Area Q. Lemhi River -36,000 acres. The infestations within the Lemhi Valley are all new, of light degree of defoliation, and exist as small isolated pockets.

Sawtooth National Forest
(140,300 infested acres)

The first expansion in 3 years in area affected by the spruce budworm on the Sawtooth National Forest occurred in 1957. This increase continued in 1958. However, the trend in severity of damage also continued downward in 1958. The new infestations showed less than 25 percent of the current growth defoliated and old infestations revealed between 25-50 percent. Most of the increase in size occurred by the older infestation expanding their perimeters.

Area R. Warm Springs Creek--5,300 acres. This area, though of the same name, is a different infestation than the one reported in 1957. This is a new infestation resulting in less than 25 percent defoliation of the current growth.

Area S. South Fork of the Boise River--88,000 acres. This area, originated in 1949, has fluctuated annually in budworm population and resultant damage until 1957. At that time the area affected increased some 33,000 acres while the severity of damage decreased from a heavy degree to a medium degree of defoliation. In 1958 this trend continued; an increase of 18,000 acres affected and a decrease in severity of damage to an overall estimate of light (less than 25 percent) degree of defoliation. One hot spot on Fleck Summit showed between 50-75 percent defoliation of the current growth.

Sampling for parasites showed 5 percent parasitism of the early larval population, which averaged 1 larva per 15-inch twig and 36 percent parasitism of the mature larval and pupal populations which averaged only 0.12 larva per 15-inch twig.

Area T. Ross Fork-Paradise Creeks--37,000 acres. This area increased approximately 7,000 acres in 1958, but remained the same in degree of defoliation--light.

Area U. King-of-the-West Creek--3,000 acres. This infestation began in 1957 and was chosen as one of the areas for the budworm population-damage study.

The area affected has not increased and sampling showed less than 25 percent of the current growth to have been eaten by the budworm. Parasitism averaged 17 percent of the early larval population, which averaged 0.47 larva per 15-inch twig and 11 percent of the mature larval and pupal population which averaged 0.15 individuals per 15-inch twig.

Area V. Big Wood River--7,000 acres. This is a new infestation noted to contain only a light degree of defoliation. It is isolated and warrants, at this time, only the mention of its existence.

Targhee National Forest
(204,365 acres infested)

In 1956 some 76,000 acres affected by the budworm were reported and recommended for control. These acres plus 42,365 more were sprayed in 1957. Good results were accomplished. The 1958 aerial and ground surveys revealed approximately 204,365 acres infested with budworm. These infestations are quite variable in intensity of damage, with approximately 86,000 acres of new infestations of which only 4,000 acres were noted as being heavily defoliated.

Area W. Pleasant Valley--31,000 acres. This is a reinfestation since the 1957 control project. Damage is light and the occurrence sporadic.

Area X. Signal Mountain-Henry's Lake--173,365 acres.

For convenience of reporting this area will be broken down into subunits: Signal Mountain contains a reinfestation of approximately 45,000 acres, noted as light degree of damage. Camas Creek-Meyers Creek is in actuality a continuation of the Signal Mountain subunit and has the same history. However, the degree of defoliation was rated as medium within this subunit and covering approximately 42,365 acres. The West side of Henry's Lake was flown only and received no ground appraisal. This is a new infestation rated as being lightly defoliated and quite sporadic in occurrence of the damage. The east side of Henry's Lake contains two spots of severe defoliation: Dry Creek (2,500 acres) and Two Top Mountain (1,500 acres). These two areas have been infested for the past two years. The remainder of approximately 29,250 acres were rated as medium degree of defoliation.

These are all young infestations causing no concern of imminent tree-killing. However, the aggressive ^{ness} of the Dry Creek and Two Top Mountain infestations warrants vigilance and a closer appraisal in the future of the biological factors involved.

Table 1. Areas, acreages, and severity of spruce budworm defoliation in
southern Idaho - 1958

National Forest	Area	Acreage of defoliation			Forest acreage
		Light	Medium	Heavy	
Boise	A-Coulter Summit	---	10,000 (X)	---	10,000 (Static)
	B-Sulphur Creek	---	17,000 (X)	---	17,000 (Static)
	C-Misc. & Isolated spots	6,700	---	---	66,700 (Incr.)
	Totals	6,700	27,000	---	33,700
Challis	D-Mid. Fk. Salmon River	---	25,000	---	25,000 (Incr.)
	E-Rapid River	36,000	---	---	36,000 (Incr.)
	F-Little Soldier Cr.	---	---	5,000	5,000 (Incr.)
	G-Loon Creek	---	35,000	---	35,000 (Incr.)
	H-Indian Creek	---	---	2,500	2,500 (Incr.)
	Totals	36,000	60,000	7,500	103,500
Payette	I-Willow Creek	2,500	---	---	2,500 (Incr.)
	J-Rugged Creek	1,250	---	---	1,250 (Incr.)
	K-Bear Creek Point	---	8,000	---	8,000 (Incr.)
	L-Pilot Peak	---	3,100	---	3,100 (Incr.)
	Totals	3,750	11,100	---	14,850
Salmon	M-Yellowjacket Creek	30,000	50,000	---	80,000 (Incr.)
	N-Porphry Creek	---	8,000	---	8,000 (Static)
	O-Big Deer Creek	---	42,000	---	42,000 (Static)
	P-Salmon River	90,000	122,000	100,000 (X)	312,000 (Incr.)
	Q-Lemhi River	36,000	---	---	36,000 (Incr.)
	Totals	156,000	222,000	100,000	478,000
Sawtooth	R-Warm Springs Cr.	5,300	---	---	5,300 (Static)
	S-Se. Fk. Boise River	77,500	10,500	---	88,000 (Incr.)
	T-Ross Fk.-Paradise	37,000	---	---	37,000 (Incr.)
	U-King-of-the-West	3,000	---	---	3,000 (Incr.)
	V-Big Wood River	7,000	---	---	7,000 (Incr.)
	Totals	129,800	10,500	---	140,300

Table 1 (Cont'd.)

National Forest	Area	Acreage of defoliation			Forest acreage
		Light	Medium	Heavy	
Targhee	W-Pleasant Valley	31,000	---	---	31,000 (Static)
	X-Signal Mtn.-				
	Henry's Lake	97,750	71,615	4,000	173,365 (Incr.)
	-Signal Mtn.	45,000	---	---	
	-Camas-Meyers	---	42,365	---	
	-W.Henry's Lake	52,750	---	---	
	-E.Henry's Lake	---	29,250	4,000	
	Totals	128,750	71,615	4,000	204,365
Totals for Southern Idaho		461,000	402,215	111,500	974,715